

## Fission Stirling Converter, Phase I

Completed Technology Project (2018 - 2019)



## Project Introduction

This effort describes a Fission Stirling Converter (FSC) that is ideally suited for use with fission-based Space Nuclear Power Systems (SNPS) and/or Nuclear Electric Propulsion (NEP) systems. FSC adapts the ongoing development of a 1-kW Free-Piston Stirling Engine (FPSE) (as used in this context “engine” and “converter” are equivalent) for terrestrial applications to meet NASA needs for SNPS. This effort is focused on Fission Surface Power Generation, and more specifically Space Power and Energy Storage. FSC offers multifunctional versatility that can efficiently convert thermal energy from a wide variety of heat sources into useful distributed electric power. The focus here is on heat extraction from a fission power system using heat pipes, or potentially a pumped liquid metal loop.

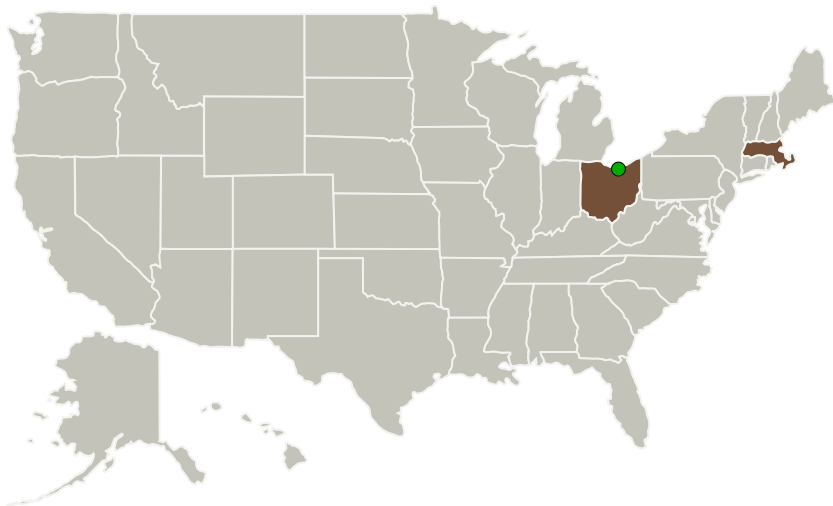
## Anticipated Benefits

Onboard energy generation for long-term space missions.

Surface energy generation for extra-terrestrial missions.

UAV power

## Primary U.S. Work Locations and Key Partners



## Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	1
Project Transitions	2
Images	2
Technology Maturity (TRL)	2
Technology Areas	2
Target Destinations	2

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

American Semiconductor, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

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Organizations Performing Work	Role	Type	Location
American Semiconductor, Inc.	Lead Organization	Industry	Boise, Idaho
American Superconductor Corporation	Supporting Organization	Industry	Devens, Massachusetts
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

## Primary U.S. Work Locations

Massachusetts	Ohio
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## Project Transitions

▶ **July 2018:** Project Start

✓ **February 2019:** Closed out

## Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/141055>)

## Images

## Briefing Chart Image

Fission Stirling Converter, Phase I  
(<https://techport.nasa.gov/image/131669>)



## Final Summary Chart Image

Fission Stirling Converter, Phase I  
(<https://techport.nasa.gov/image/134485>)

Project Management  
(cont.)

## Program Manager:

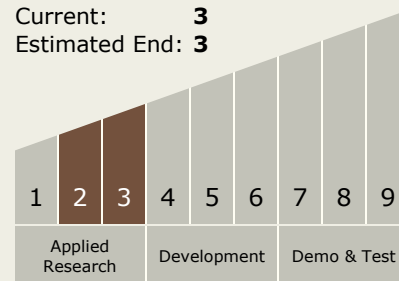
Carlos Torrez

## Principal Investigator:

Mike Amato

Technology Maturity  
(TRL)

Start: 2  
Current: 3  
Estimated End: 3



## Technology Areas

## Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.4 Dynamic Energy Conversion

## Target Destinations

The Moon, Mars